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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/805,792

03/22/2004

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EXAMINER

WU, IVES J

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/805,792	Applicant(s) LUNDQUIST, ERIC GUSTAVE	
	Examiner IVES WU	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4, 21-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 21-33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

- (1). Applicant's Amendments and Remarks filed on 4/23/2008 have been received. Claims 1 and 26 are amended. Claims 5-20 and 34-36 are cancelled before. The rejections of claims 1-4 and 2-33 in prior Office Action dated 01/23/2008 is withdrawn in view of current Amendments.

However, a new ground of rejections for claims 1-4, 21-33 is presented hereafter.

Claim Rejections - 35 USC § 102/103

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

- (2). **Claims 1-4 and 22-33** are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Harris et al (US05585408A).

As to catalyst comprising at least one sulfone cross-linked ion exchange resin having improved resistance to deformation under pressure, the catalyst further comprising polymerized monomer units of (a) from 0.1 to 10 wt% of one or more polyvinylaromatic monomers and (b) from 90 to 99.9 wt% of one or more monounsaturated vinylaromatic monomers; wherein the catalyst contains 0.1 to 1.0 millimole sulfone bridging groups per gram dry catalyst in **independent claim 1**, Harris et al (US05585408A) disclose crosslinked seeded copolymer beads

and process of manufacture (Title). Crosslinking can be achieved either during sulfonation by increasing sulfone bridge formation or before sulfonation by either alkylene bridge formation or by incorporation and subsequent activation of a crosslinkable functionality in the copolymer that forms the seed in the seeded polymer bead process (Abstract, line 7-12). Monovinyl aromatic monomers suitable for use in the polymer seed beads include styrene, alkylstyrene. Polyvinyl aromatic monomers suitable for use in the polymer seed beads include divinylbenzene, divinyltoluene (Col. 4, line 55 - Col. 5, line 2). The polymer seed beads are comprised of a 1st monovinyl aromatic monomer and a 1st polyvinyl aromatic monomer, with the concentration of the polyvinyl aromatic monomer not exceeding 3 weight percent of the total monomer weight (Col. 4, line 44-48). As demonstrated in Example II, agitation was commenced and either oleum and/or boric acid or boron oxide were dissolved in the sulfuric acid (Col. 12, line 1-9). While the extent of sulfone bridging is difficult to quantify, the presence of sulfone bridging can be detected and estimated by comparing proton nuclear resonance spectra of aqueous beads slurry or by comparing dry weight capacities (DWC) found with those calculated on the basis of weight percent sulfur of the resin (col. 12, line 21-26). In view of the substantially identical catalyst disclosed by Harris et al, and by applicant, it is examiner's position to believe that the catalyst of Harris et al would inherently possess the 0.1 to 1.0 millimole sulfone bridging groups per gram dry catalyst produced by an oleum sulfonating agent as claimed. Since USPTO does not have proper means to conduct the measurements, the burden now is shifted to applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to the catalyst in the form of spherical beads having an acid capacity of 4.0 to 6.0 millimole sulfonic acid groups per gram dry catalyst in **claim 2**, Harris et al (US05585408) disclose the seed beads being typically from about 10 to about 750 micrometers in diameter, most preferably of from 100 to 500 μm (Col. 4, line 51-53). In view of the substantially identical product disclosed by applicant and by Harris et al, it is Examiner's position to believe that the product of Harris et al would inherently possess the acid capacity as claimed. Since USPTO does not have proper means for the measurement, the burden now is shifted to applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to capable of catalyzing the formation of at least one bisphenol upon contacting phenols and aldehyde or ketones in **claim 2**, because the product disclosed by Harris et al is

substantially identical to the catalyst product in applicant's claim 1, it will be useful in catalyzing the condensation reaction between phenol and acetone, yielding bisphenol-A as well, the intended use must result in a manipulative difference as compared to the prior art. *See In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

As to catalyst resin beads to be prepared from a jetted, suspension polymerized polystyrene/divinylbenzene copolymer in **claim 3**, Harris et al (US05585408) disclose the monomer mixture having been imbibed into the polymer seed beads and suspension polymerization (Col. 6, line 33-39), which reads on the limitation of instant claim. Also, because it is product-by-process limitations, although prepared in a different manner, appeared to be the same as the claimed product. *In re Thorpe*, 227 USPQ 964 (CAFC 1985).

As to be in the reactor used for producing at least one bisphenol and is present in an amount from about 1 to 40 wt%, based on total weight of reactants, which comprises one or more phenols and one or more aldehydes or one or more ketones in **claim 4**, because the product disclosed by Harris et al is substantially identical to the catalyst product in applicant's claim 4, it will be useful in catalyzing the condensation reaction between phenol and acetone, yielding bisphenol-A as well, the intended use must result in a manipulative difference as compared to the prior art. *See In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

As to catalyst catalyzing the condensation reaction between phenol and acetone, yielding bisphenol-A in **claim 22**, because the product disclosed by Harris et al is substantially identical to the catalyst product in applicant's claim 1, it will be useful in catalyzing the condensation reaction between phenol and acetone, yielding bisphenol-A as well, the intended use must result in a manipulative difference as compared to the prior art. *See In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

As to one or more polyvinylaromatic monomers selection in **claim 23**, Harris et al (US05585408) disclose the DVB (Col. 4, line 67).

As to one or more monounsaturated vinylaromatic monomers selection in **claim 25**, Harris et al disclose polystyrene beads (Col. 4, line 55).

As to catalyst comprising 0.6 mmol of aromatic rings having two sulfonic acid groups per gram of dry catalyst and the catalyst comprising 0.2 mmol of sulfone bridging groups per gram of dry catalyst in **claim 24**, in view of the substantially identical product disclosed by applicant and by Harris et al, it is Examiner's position to believe that the product of Harris et al would inherently possess 0.6 mmol of aromatic rings and 0.2 mmol of sulfone bridging groups per gram of dry catalyst as claimed. Since USPTO does not have proper means for the measurement, the burden now is shifted to applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to the limitation of **independent claim 26**, the disclosure of Harris et al is incorporated herein by reference, the most subject matters of copolymer component having between 1.0 and 6.0 wt% of divinylbenzene cross-linking, at least one sulfone cross-linked ion exchange resin having improved resistance to deformation under pressure has been recited in the applicant's claims 1, 2, 4 and 24 in a narrower scope, and has been discussed therein.

As to the catalyst having acid capacity of greater than 4.0 mmol/g and having 0.1 to 1.0 mmol/g of sulfone bridging groups per gram dry catalyst in the **independent claim 26**, in view of the substantially identical catalyst compositions and slightly different process of sulfonation between Harris et al and by applicant, it is the examiner's position to believe that the catalyst of Harris et al would inherently possess acid capacity of greater than 4.0 mmol/g and having 0.1 to 1.0 mmol/g of sulfone bridging groups per gram dry catalyst. Since USPTO does not have proper means to conduct the experiments and measure the properties, the burden now is shifted to applicant to **prove** otherwise. *In re Fitzgerald*, 205 USPQ 594 (CCPA 1980).

As to the limitations of **dependent claim 27**, the disclosure of Harris et al is incorporated herein by reference, the most subject matters of 1 – 4 wt% of divinylbenzene crosslinking, having acid capacity of greater than 5.1 mmol/g in the applicant's claim 26 has been recited in the applicant's claim 1 and 26, and has been discussed therein.

As to the limitation of **dependent claim 28**, the disclosure of Harris et al is incorporated herein by reference, the most subject matters of spherical beads catalyst prepared from jetted, suspension polymerized polystyrene/divinylbenzene copolymer in applicant's claim 27 has been recited in the applicant's claim 3, and has been discussed therein.

As to the limitations of **dependent claims 29-33**, the disclosure of Harris et al is incorporated herein by reference, the most subject matters has been recited in applicant's claims 4 and 21-24, and has been discussed therein.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

(3). **Claim 21** is rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al (US05585408A), in view of Lundquist (US05233096A).

As to 1 to 35 wt% of sulfonic acid groups containing an ionically attached thiol promoter in **claim 21**, Harris et al **do not teach** the use of an ionically attached thiol promoter in 1 to 35 wt% as claimed.

However, Lundquist (US05233096A) **teaches**, optionally in the presence of from about 1 to 40 wt% of a mercaptan reaction promoter, preferably ethanolthiol, aminoethane-thiol or dimethyl-thiazolidine (Col. 4, line 34-41).

The advantage of using a thiol compounds is to promote the chemical reaction.

Therefore, it would have been obvious at time of the invention to include the thiol promoter of Lundquist in the reaction of Harris et al in order to obtain the advantage cited above.

Response to Arguments

Art Unit: 1797

(4). Applicant's arguments, filed 4-23-08, with respect to the rejection(s) of claim(s) under Goldstein et al article have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Harris et al (US05585408A).

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to IVES WU whose telephone number is (571)272-4245. The examiner can normally be reached on 8:00 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Ives Wu

Art Unit: 1797

Date: June 30, 2008

/Duane S. Smith/

Supervisory Patent Examiner, Art Unit 1797

7-1-08